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09/926,193	09/21/2001	Hiroyuki Atarashi	214072US2PCT	4538
22850 7590 11/03/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
WONG, WARNER				
ART UNIT		PAPER NUMBER		
2416				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

09/926,193

**Applicant(s)**

ATARASHI ET AL.

**Examiner**

WARNER WONG

**Art Unit**

2416

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7-13, 15 and 17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-13, 15 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/C)
- Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Allowable Subject Matter***

1. The indicated allowability of cancelled claims 6, 14, 16 and 18 are withdrawn.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 7-13, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baum (US 5,867,478) in view of Sakoda (US 6,532,223) and Suzuki (US 6,652,752).

**Regarding claims 1 and 8**, Baum describes a channel structuring method/base station wherein transmission signals are modulated by orthogonal frequency division multiplexing (OFDM) comprising n sub-carriers and multiplexed by time division multiplexing to configure downlink channels (col. 3, line 30-35, where OFDM transmission using time and frequency dimensions are used by base unit/station (downlink) to the mobile unit/station), said method/base station comprising:

a step/common channel signal insertion unit for selecting from the n sub-carriers, a predetermined number of sub-carriers for insertion of common pilot signals; and a step/pilot signal insertion unit for inserting a common pilot signal into the selected sub-

carriers (fig. 4-6 & col. 9, lines 37-67 & col. 10, lines 1-49, where in each exemplary embodiment, predetermined sub-carriers are used (selected to) transmit (insert) pilot code (channel) signals, performed by the base unit/station's modulator (pilot signal insertion unit), as described in col. 14, lines 4-16).

wherein providing time frames by segmenting a communication channel of said  $n$  sub-carriers at every predetermined interval (fig. 4-13, segmenting into time/baud intervals for all ( $n$ ) subcarrier);

Although Baum fails to exemplify that above steps are also being used for selecting  $n$  sub-carriers and inserting common control channel signals into them, Baum explicitly describes that such examples can be applied to paging or broadcast (i.e. common control) channels: col. 8, lines 53-57 & col. 58-63, "Although the embodiments was based on the coordination of the transmission of a synchronization signal by each base unit, the scheme is not limited to this application. The coordination scheme is also directly applicable to the transmission of paging, system information, broadcast signals, or other information."

Additionally, Sakoda also describes within a wireless telecommunication system (obviously with pilot/beacon signaling), a common control channel (CCH) may be placed in a particular frequency channel/subcarrier (fig. 1) or at different locations (fig. 8) via a predetermined rule or via an irregular sequence/locations based on randomization (col. 7, lines 59-65).

Sakoda explicitly describe that the segmented time frames for all (n) sub-carriers are performed by Time Division Multiple Access (TDMA) with respect to all selected sub-carriers (col. 4, lines 19-27, TDMA used for the sub-carriers), where TDMA is a form of Time Division Multiplexing (TDM) by definition.

It would have been obvious to one with ordinary skill in the art at the time of invention to understand that the steps for selecting n-sub-carriers and inserting common pilot signal may can also be applied for common control signal per the Baum reference alone or in view of Sakoda.

The motivation for combining the teaching is such provisioned steps can effectively measure the channel responses of co-channel interfering signals (Baum, col. 1, lines 35-38), plus allowing an efficient search and appropriately establishing communication between a base station and a terminal (Sakoda, col. 3, lines 33-40).

Baum and Sakoda combined fail to explicitly describe:

ensuring that at least one of the selected subcarriers has both a common control channel signal and a common pilot signal inserted therein.

Suzuki describes:

ensuring that at least one of the selected subcarriers has both a common control channel signal and a common pilot signal inserted therein (fig. 3, col. 4, lines 53-61 & also col. 9, lines 42-45, master base station transmit pilot and common control signal on the selected frequency channel (subcarrier)).

It would have been obvious to one with ordinary skill in the art the time of invention by applicant to specify using selected subcarriers of Baum and Sakoda combined for transmission of both the pilot and common control channel as in Suzuki.

The motivation for combining the teachings is that it allows subscribers/personal stations to spend less time in search & capturing the common control signal and other sources (Suzuki, col. 2, lines 31-34).

**Regarding claim 2**, Baum, Sakoda and Suzuki combined further suggest:

the common control channel signal and the common pilot signal are inserted periodically into every time frame of said selected subcarriers (Baum, col. 8, lines 53-57 & col. 10, 58-63, inserted at every set of time period/ baud (i.e. periodically)).

**Regarding claim 3**, Baum, Sakoda and Suzuki combined further suggest that the common control channel signal and the common pilot signal are periodically inserted into every time frame of said selected subcarriers, either the common control channel signal or the common pilot signal, or both thereof, is/are inserted at the same timing as either the common control channel signal or the common pilot signal, or both thereof of other subcarriers (Baum, fig. 4 & 6, the selected (common) pilot code (channel) signal are periodically inserted at the same timeslot within the baud interval for every subcarrier, along with the common control signals as described in col. 10, lines 58-63).

**Regarding claims 4 and 12**, Baum, Sakoda and Suzuki combined suggest:

inserting the common control channel signal continuously into the time frame of said selected subcarriers (Baum, fig. 5 in relations to the common control signals as described in col. 10, lines 58-63).

inserting the common pilot channel signal periodically into the time frame of said selected subcarriers (Baum, fig. 6,7,8 or 9).

**Regarding claim 5 and 13**, Baum, Sakoda and Suzuki combined suggest:

inserting the common pilot channel signal continuously into the time frame of said selected subcarriers (Baum, fig. 5).

inserting the common control channel signal periodically into the time frame of said selected subcarriers (Baum, fig. 6,7,8 or 9 in relations to the common control signals as described in col. 10, lines 58-63).

**Regarding claim 7**, Baum, Sakoda and Suzuki combined further suggest:

inserting the common control channel signal continuously into the time frame of said selected subcarriers, and inserting the common pilot channel signal continuously into the time frame of said selected subcarriers (Baum, fig. 5, for common pilot code (channel) signal are continuously inserted into (predetermined) subcarriers 502, 504, 506 & 508 and col. 9, lines 61-66 in relations to fig. 5 for the paging/broadcasting (common control) channel counterpart).

**Regarding claim 9**, Baum, Sakoda and Suzuki combined further suggest:

inserts the common control channel signal periodically into every time frame of said selected subcarriers (Baum, fig. 5, col. 9, lines 9-11 & col. 10, lines 58-63, inserting

pilot and broadcast signals to all or pre-selected (predetermined subset of)  $n$  subcarriers).

**Regarding claim 10**, Baum, Sakoda and Suzuki combined further suggest:  
common pilot signal insertion means selects a predetermined number of subcarriers from said  $n$  subcarriers, and inserts the common pilot channel signal periodically into every time frame of said selected subcarriers (Baum, fig. 5);

**Regarding claims 11 and 15**, Baum, Sakoda and Suzuki combined further suggest:

said common pilot signal insertion means selects a predetermined number of subcarriers from said  $n$  subcarriers and inserting the common pilot periodically into every time frame of said selected subcarriers (Baum, fig. 5, where pilot code signals are being inserted to all or pre-selected (predetermined subset of)  $n$  subcarriers), and

said common control channel signal insertion means and said common pilot signal insertion means insert the common control channel signal and the common pilot signal, respectively, into said selected subcarriers such that a timing of the insertion of either the common control channel signal or the common pilot signal, or both, are same as the timing of either the common control channel signal or the common pilot signal, or both, of other subcarriers (Baum, fig. 5 in relation to col. 10, lines 58-64 for paging/broadcast (i.e. common control) channels).

**Regarding claim 17**, Baum and Sakoda combined further suggest:

said common pilot signal insertion means selects a predetermined number of subcarriers from said  $n$  subcarriers, and inserts the common pilot signal periodically into



every time frame of said selected subcarriers (Baum, fig. 4 or 6, where pilot code (channel) signal is being periodically inserted to all or pre-selected (predetermined subset of) n subcarriers).

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-5, 7-13, 15 and 17 have been considered but are moot in view of the new ground(s) of rejection.

The examiner believes that Baum in view of Sakoda suggest the additional limitations of "at least one of the selected sub-carriers has both a common control channel signal and a common pilot signal inserted therein" (Baum, fig. 12 & col. 14, lines 6-16, where 1204 indicates pilot codes and 1202 is the synchronization signal, where such synchronization signal can be replaced with other system information such as paging or broadcast (= common control signal) - see col. 10, lines 58-63).

For sake of argument, the examiner adds another reference to explicitly address the new limitations.

### ***Conclusion***

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Papasakellariou (US 20060285484) describing pilot design and Persson (US 6,647,000) describing methods for performing slot hopping of logical control channels.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571) 272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Warner Wong  
Examiner  
Art Unit 2416

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10/23/08